

Éditorial

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Transmissible spongiform encephalopathies (TSE) are neurological degenerative diseases for which the prototypes are scrapie in sheep, some forms of Creutzfeldt-Jakob disease (CJD) in man and the bovine spongiform encephalopathy (BSE) in cattle. Everybody has in mind the “mad cow” epidemic that emerged in 1986 and suddenly revived at the end of 2000. Since then, over 189,000 cases of affected cows have been reported, more than 97% of them in the United Kingdom, 2.9% in the rest of the European Union (EU) and a few cases in the rest of the world, including USA, Canada and Japan. In order to avoid a further spread of BSE and its human form, the new variant CJD, the European Commission (EC) has taken several actions.

To guarantee consumers’ safety, the EU has decided to organize the monitoring and the control of BSE in various ways. Diagnostic methods to detect BSE include the classical *post mortem* examination of central nervous system (CNS) tissue by histopathology or immunohistochemistry and, more recently, by the use of rapid immunoassays. So far the European Commission has already evaluated a wide number of rapid *post mortem* tests for the diagnosis of BSE in cattle. Among these tests several ones have been approved for BSE monitoring. More than ten million BSE tests per year are currently carried out within the EU.

Official food control also demands methods for detecting tissues of CNS in meat products. Several approaches have been developed so far, methods using tissue specific DNA detection, immunochemical methods based on the detection of neurone specific enolase (NSE) and glial fibrillary protein (GFAP). The last two methods have been recently validated in a collaborative trial. Additional approaches to differentiate between muscle and non-muscle tissues such as liver, kidney and heart have been developed using gas chromatography with mass spectrometric detection (GC-MS) by the detection of specific fatty acids.

On the other side, to contribute to the implementation of the Commission decisions and to reduce the economic impact of a total ban on the use of meat and bone meals (MBM), the European project “Strategies and methods to detect and quantify mammalian tissues in feeding stuffs” (STRATFEED, G6RD-2000-CT-00414) was funded under the 5th framework programme, DG RTD, Measurement and testing activity, was coordinated by the Walloon Agricultural Research Centre (CRA-W) and was launched on 1 January 2001. The objectives of this project were to provide tools and methods harmonized at the European level to detect and quantify MBM in feeding stuffs. These methods had to be usable in any laboratory involved in the feed quality control as well as in antifraud activities. Besides microscopy, which is the classical method for identification, three new techniques were studied in this project in order to provide innovative protocols: near infrared spectroscopy (NIRS), near infrared microscopy (NIRM) and DNA detection using polymerase chain reaction (PCR). To support the development of those methods, an European sample bank has been set up in Cordoba (Spain), gathering 2500 samples of pure animal ingredients, and pure or spiked feeds. The wide range of products available as well as the different origins of the samples collected, offer the laboratories a high valuable source of materials to develop and to test the suitability and the performance of their methods. To manage all the information and the data produced by the project, a global computer system – Internet based – has been developed, including microscopy pictures and spectral databases, query modules to explore the data and a decision support system for classical microscopy. Besides the STRATFEED project, various food and feed research and control institutions are developing other analytical methods as well, focusing on the detection of banned MBM in feed, which are based on immunological, chromatographic, NIR imaging, mass spectrometry and electronic nose techniques.

Concerning the conventional cattle slaughtering process, some critical stages are identified where a dissemination of specified risk material (SRM: brain, spinal cord) within or onto the carcass and within the slaughterhouse environment can occur. Therefore alternative stunning methods like electrical stunning or concussion stunning as well as new measures regarding the safe handling of head and harvesting of head meat are proposed.

When animals are slaughtered to produce meat for human consumption approximately 50% of the animal is turned into animal by-products. In the EU, approximately 17 million tons of slaughter by-products are produced by the meat industry every year. Over 14.5 million tons of this total come from animals declared fit for human consumption. The rendering and fat processing industry provides the vital outlet for these materials by transforming them into a wide variety of products. From this raw material, over 1.5 million tons of fat and three million tons of protein are produced annually by this industry. However, many of the traditional applications have been abandoned as a result of BSE epidemic, and newer alternatives like energy/fuel sources have been developed over the past five years. To reduce the risk of transmission of BSE

in the feed chain, studies aim at the reduction of infectivity by different thermal treatment processes used in rendering and fat processing.

In the framework of the STRATFEED project, the CRA-W in collaboration with the Institute for Reference Materials and Measurements (IRMM) of the EC's Joint Research Centre, the Belgian Food Agency (AFSCA) and the Walloon Agrobiopole (Agrobiopôle), organised on 16–18 June 2004 an international symposium in Namur, Belgium. The purpose of this symposium was to give an overview of the latest scientific achievements in food and feed safety in the context of the transmissible prion diseases (TSE). Around 150 participants coming from 21 European countries as well as from USA, Canada, Japan and Korea, shared their experience and their research results in oral presentations, posters, exhibition sessions and discussions on current status of TSE problems and legislative aspects in Europe and in the USA, on analytical methods for food and feed, and also on prevention and technical aspects. The proceedings included in this issue of *BASE* report the state of developments in 2004 regarding those topics. The lectures and posters as well as their abstracts can be viewed on the website of this event (<http://stratfeed.cra.wallonie.be>).